

What is claimed is:

1. A device for laying a plurality of line elements between a first member and a second member rotatable in relation to each other about a rotation axis, said line elements containing at least one of electric and fluid lines, one end of each line element held on said first member by a holding member and the other end thereof held on said second member by a holding member, said device comprising:

a double pipe structure having an inner pipe member and an outer pipe member having different diameters and a center axis, said inner and outer pipe members arranged in a generally coaxial relationship to each other and coupled to each other by a coupling member, said double pipe structure adapted to be attached to the first member with the center axis thereof generally aligning with the rotation axis; and

said plurality of line elements divided into first and second groups, said first group of line elements being laid to extend through an inner hole of said inner pipe member and said second group of line elements being laid to extend through an annular gap formed between said inner pipe member and said outer pipe member.

2. The device according to claim 1, wherein said second group of line elements is unwound on said inner pipe member when said first member is in a predetermined rotational position relative to said second member; and

wherein, as viewed from said second member, said second group of line elements is wound right-handed on the outer peripheral surface of said inner pipe member when said first member is rotated right-handed from the predetermined rotational position, and is wound on left-handed on the outer peripheral surface of said inner pipe member when said first member is rotated left-handed from the predetermined rotational position.

3. The device according to claim 1, wherein said second group of line elements has a smaller allowable bending radius than said first group of line elements.

5 4. The device according to claim 2, wherein said second group of line elements has a smaller allowable bending radius than said first group of line elements.

10 5. The device according to claim 1, wherein a surface coating is provided for preventing abrasion at least partially on the inner and outer peripheral surfaces of said inner pipe member as well as the inner peripheral surface of said outer pipe member which said line element can contact.

15 6. The device according to claim 2, wherein a surface coating is provided for preventing abrasion at least partially on the inner and outer peripheral surfaces of said inner pipe member as well as the inner peripheral surface of said outer pipe member which said line element can contact.

20 7. The device according to claim 3, wherein a surface coating is provided for preventing abrasion at least partially on the inner and outer peripheral surfaces of said inner pipe member as well as the inner peripheral surface of said outer pipe member which said line element can contact.

25 8. The device according to claim 1, wherein a collar of a low friction material is inserted at least partially along the inner and outer peripheral surfaces of said inner pipe member as well as said inner peripheral surface of said outer pipe member.

30 9. The device according to claim 2, wherein a collar of a low friction material is inserted at least partially along the inner and outer peripheral surfaces of said inner pipe member as well as said inner peripheral surface of said outer pipe member.

35 10. The device according to claim 3, wherein a collar of a low friction material is inserted at least partially along the inner and outer peripheral surfaces

of said inner pipe member as well as said inner peripheral surface of said outer pipe member.

11. The device according to claim 1, wherein said first and second members comprise components constituting
5 a portion of a robot body.